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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,973	01/10/2002	Kyoung-Ri Park	P/2292-52	1123

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EXAMINER

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 05/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/045,973

Applicant(s)

PARK ET AL.

Examiner

Kallambella Vijayakumar

Art Unit

1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 11-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3 Nos.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Detailed Action

- Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
- The IDS submitted on 1/10/2002, 4/30/2003 and 04/12/2004 have been considered and acknowledged.
- Although the specification has been checked, it has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
- Applicant's election without traverse of Group-I, Claims 1-10 in Paper dated 02/20/2004 is acknowledged. Claims 11-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group-II, there being no allowable generic or linking claim. This Action is made FINAL.
- Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- Claims 1, 3 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "particular crystalline" in claims 1, 3 and 10 is a relative term which renders the claim indefinite. The term "particular crystalline" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The public will not be appeased about the boundaries of this limitation and will not be able to make use of the invention without undue burden of experimentation.

Claim Rejections - 35 USC § 102

Claim Rejections - 35 USC § 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claims 1-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sekiguchi et al (US Patent 4,628,187).

Sekiguchi et al disclose a planar heating element with PTC characteristics comprising of a resistive body layer formed of a crystalline polymer/resin containing electrically conductive particles and inert fillers disposed between at least a pair of electrodes. Sekiguchi further disclose the PTC formulations to comprise a dispersion of conductive particles of carbon

black, graphite, silver {meets limitations of instant claims: 1, 6, 10} in crystalline polymers of polyethylene, polypropylene, copolymers of polyethylene and vinyl acetate or phenolic resins {meets limitations of instant claims: 1, 5, 10}, and inorganic insulating particles of alumina or silica {meets limitations of instant claims: 4 and 7}. Sekiguchi also teach forming a covering layer of phenolic resin over the PTC body followed by an insulating protective film on the outer surface for attachment to an object {meets limitations of instant claims: 8-9}. Sekiguchi further disclose that the resistive body has PTC characteristics since the resin changes from a crystalline structure to an amorphous structure to result in sharp rise in resistance in the vicinity of the melting point; and the variation of composition based on the desired PTC. (Abstract, Col-1: Lines: 20-33; Col-2, Lines: 33-38; Col-3, Lines: 35-44; Col-3, Line-62 to Col-4, Line-8; Col-7, Lines: 62-65).

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

The PTC device by Sekiguchi et al showed very little variation (C1 and C2 in Fig-2) and uses the same crystalline polymer and conductive particles preferred by the applicants (See Specification: Pages 6-7), wherein the limitation of the very little change in resistance upon exposure to over current in instant claims 2-3 would be inherent.

During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow. Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997).

All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by Sekiguchi et al be insufficient to arrive at the limitations of the instant claims, it would have been obvious to one of ordinary skill in the art to make obvious modifications to the composition optionally choosing conductive fillers such as carbon and crystalline polymers such as polyethylene, that are well known in the art at the time of claimed invention by the applicants, to benefit from low ambient resistivity values, because Sekiguchi is suggestive of such modifications and variations, and with the expectation of reasonable success in obviously arriving at the limitations of the instant claims by the applicants.

2. Claims 1-3, 5-6 and 8-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Iwasaki et al (US Patent 6,114,672).

Iwasaki et al disclose a PTC device with low volume resistivity that would not substantially differ after reflowing of solder and repeated tripping{meets limitations of instant claims: 1-3, 8-10}, comprising of a irregular surface contoured particulate conductor material dispersed in non-conductive crystalline polymer matrix material (Abstract). The crystalline polymers of the composition included polyolefins such as polyethylene and polypropylene{meets limitations of instant claims: 1, 5, 10}, and conductive particles included silver, nickel, carbon and graphite{meets limitations of instant claims: 1, 6, 10} (Col-2. Line-65 to Col-3, Line-7, Col-3, Lines: 21-32; Col-4, Lines: 9-12, 15-18; Col-10, Table-1).

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art,

the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by Iwasaki et al be insufficient to arrive at the limitations of the instant claims, it would have been obvious to one of ordinary skill in the art to make obvious modifications to the composition optionally choosing conductive fillers such as nickel/carbon and crystalline polymers such as polyethylene, that are well known in the art to benefit from stable low ambient resistivity values, because Iwasaki is suggestive of such modifications and variations, and with the expectation of reasonable success in obviously arriving at the limitations of the instant claims by the applicants.

3. Claims 1-10 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over either Handa et al (US Patent 6,299,801) or Iwasaki et al (US Patent 6,114,672).

Handa et al disclose PTC Thermistor comprising of at least two crystalline and/or amorphous thermoplastics such as polyethylene, copolymers of olefins, PVDF, polyamides containing dispersed spikey nickel proturbences as conductive fillers, a low molecular weight organic compound such as crystalline waxes and antioxidants, a thermosetting polymer and electrodes. The thermistors showed low ambient resistance values with very low hysteresis and revert back to the original resistance value after overheating. Handa further teaches the benefits of including the optional crosslinkers, dispersants and antioxidants into the composition and the forming of PTC thermistor element (Abstract, Col-4, Liners: 15-30; Col-

8, Lines: 28 to Col-9, Line-5; Col-14, Lines: 41-47; Col-15, Lines: 9-22; Col-16, Lines: 12-15; Col-18, Lines: 47-53, Col-25, Table-1, Figure-2).

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosures by Handa et al be insufficient to arrive at the limitations of the instant claims, it would have been obvious to one of ordinary skill in the art to make obvious modifications to the composition optionally choosing conductive fillers such as carbon and crystalline polymers such as polyethylene that are well known in the art, to benefit from low ambient resistivity values, because Handa is suggestive of such modifications and variations, and with the expectation of reasonable success in obviously arriving at the limitations of the instant claims by the applicants.

Conclusion

- The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Yamada et al (US Patent 5,174,924), Chandler et al (US Patent 5,801,612), Handa

et al (US Patent: 5,945,034), Isozaki et al (US Patent 6,358,438), Sugaya (US Patent 5,280,263) and Cheng (US Patent 5,554,679).

- Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on M-Th, 07.00 - 16.30 hrs, Alt. Fri: 07.00-15.30 hrs.
- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMV
May 14, 2004


Mark Kopec
Primary Examiner